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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention A liquid crystal display (LCD), a plasma display (PDP), It is related with the polarization film which uses the anti-dazzle material and it which are used suitably for image display bodies, such as CRT and EL, etc., and have the anti-dazzle property which was excellent in flash prevention of a picture, and Hitoshi Kougami of contrast especially, and were excellent in chemical resistance and abrasion resistance.

[0002]

[Description of the Prior Art]Pressure of business of the image display device (this is hereafter called "display".) represented by LCD, PDP, CRT, and EL is carried out in various fields including television or a computer.

Remarkable development is accomplished.

These days, as for development of a display, efforts are concentrated to highly-minute-izing of a picture, high-definition-izing, low power consumption, etc. Much more spread is expected with arrival of multimedia age, and these displays that play an important role of a man machine interface will be predicted to be what the spread as a cellular phone, PHS, and other various objects for personal digital assistants expands remarkably especially from now on. In order to prevent reflected [ outdoor daylight ], a certain acid-resisting processing is performed to these display surfaces. For example, in LCD, surface roughening of the display surface is carried out, light is scattered about or diffused, and the BOKASU technique is generally performed in the image. As the method of this surface roughening, the method of forming unevenness in the surface by the method by the sandblasting method, the embossing method, etc., the method of providing the coating layer which made the feeler contain or the method of forming the porous membrane by sea island structure, etc. is adopted conventionally.

[0003]By the way, the display surface in which unevenness was formed on the surface has the

problem that a picture glares by a relation with the concavo-convex pitch of the above-mentioned surface roughening layer, with highly-minute-izing of a display, and high-definition-izing. Although highly minute-ization of this display is based on high integration of a pixel, when the interval of said unevenness is larger than this picture element pitch, it generates the flash by interference. In order to prevent a flash, the height and interval of unevenness of the above-mentioned surface roughening layer must be elaborated, and it must control so that unevenness becomes uniform further in the whole field. In order to form such a uniform surface roughening layer, paying attention to the method of providing the coating layer which made the filler containing among the methods of the aforementioned surface roughening, the method of controlling the particle diameter and content of this filler is proposed. although the thing excellent in permeability, heat resistance, abrasion resistance, chemical resistance, etc. is desirable as resin used for this coating agent, a substrate is lacking in heat resistance -- high -- since it is a transparent plastic film in many cases, it is used by UV curing type resin as resin, being fond. As the example, JP,1-105738,A, JP,5-162261,A, etc. which make a component UV curing type resin and silica paints are reported.

[0004]However, since the surface roughening layer which consists of UV curing type resin and silica paints was presenting the liquid condition of hypoviscosity after applying a paint to a substrate until it irradiates with UV, the fillers in a surface roughening layer adhered each other, and it had the problem of condensing (orange peel). In order to make the content of a filler increase or to control surface roughening layer thickness to elaborate unevenness of a surface roughening layer surface, when the paint of a surface roughening layer was diluted with a solvent etc., especially, it was remarkable and had become highly-minute-izing and what also has a conjointly remarkable flash of the display. And on the surface of the surface roughening layer which consists of UV resin and silica, interference of light breaks out easily in the portion of the convex of silica, and the portion of the concave of resin, and it has a problem of generating of an interference fringe. Although it is thought that LCD which has the features, such as a light weight, a compact, and flexibility, monopolizes a commercial scene as a display for personal digital assistants, a touch panel is carried in these personal digital assistants, and what is touched directly and operated with the pen and finger of a plastic is becoming in use. Therefore, in addition to above-mentioned acid resistibility, the demand to the abrasion resistance to a display surface and chemical resistance is increasing.

[0005]

[Problem(s) to be Solved by the Invention]This invention is what was made in view of the above-mentioned actual condition in conventional technology, . Namely, the purpose of this invention prevented reflected [ extraneous lights, such as sunlight to a display and a fluorescent lamp, ]. It is in providing the display which has the outstanding anti-dazzle property which can acquire a clear picture without a flash etc. without reducing the outstanding acid

resistibility and picture contrast and in which the outstanding abrasion resistance and chemical resistance are shown, and an especially suitable anti-dazzle material for a full color liquid crystal display. Other purposes of this invention are to provide the polarization film which uses the above-mentioned anti-dazzle material.

[0006]

[Means for Solving the Problem] Anti-dazzle material of this invention has a surface roughening layer which comes to distribute a filler in a resin matrix at least via direct or other layers to one side or both sides of a transparent substrate, and is characterized by a difference of a refractive index of this resin matrix and a filler being 0.10 or less. A polarization film of this invention via direct or other layers on one side of a transparent substrate, A surface roughening layer which comes to distribute a filler is provided into a resin matrix at least, a surface roughening layer of this transparent substrate has the composition for which a protective layer is laminated via a polarization base to an opposite side, and it is characterized by a difference of a refractive index of said resin matrix and a filler being 0.10 or less.

[0007]

[Embodiment of the invention] Hereafter, an embodiment of the invention is described in detail. A transparent film, glass, etc. can be used as a transparent base material used for anti-dazzle material of this invention. As the example, polyethylene terephthalate (PET), polyethylenenaphthalate (PEN), Triacetyl cellulose (TAC), polyarylate, polyimide, Glass base materials, such as various resin films, such as polyether, polycarbonate, polysulfone, polyether sulphone, cellophane, aromatic polyamide, polyethylene, polypropylene, and polyvinyl alcohol, and silica glass, and soda glass, etc. can use it conveniently. PET and TAC are preferred when using for PDP and LCD.

[0008] The transparency of these transparent base materials is not less than 90% of thing more preferably not less than 80% as light transmission (JIS C-6714), although a higher thing is better. As for a transparent substrate, when using the transparent substrate for a small lightweight liquid crystal display, it is more preferred that it is a film. Although the thinner one is desirable from a viewpoint of a weight saving about thickness of a transparent base material, if the productivity is taken into consideration, it is preferred the range of 1-700 micrometers and to use a 25-250-micrometer thing preferably. It is preferred to perform surface treatment processing of spreading of surface treatments, such as alkali treatment, corona treatment, plasma treatment, fluoridization, and sputtering treatment, a surface-active agent, a silane coupling agent, etc., etc. or Si vacuum evaporation to a transparent substrate from a point which improves the adhesion of a surface roughening layer and a transparent substrate.

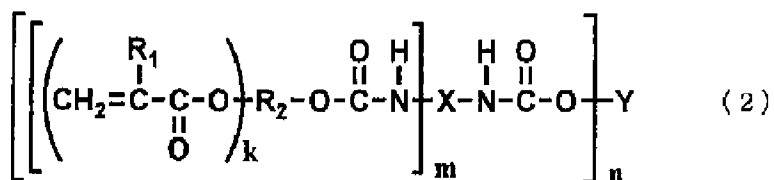
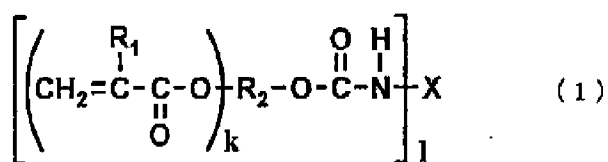
[0009] An antistatic layer may be provided in order to prevent dirt, such as dust which adheres to a transparent substrate electrostatically in a display surface. An antistatic layer vapor-deposits metallic oxide films, such as metal, such as aluminum and tin, and ITO, Metal

particles and whiskers which are provided very thinly by sputtering etc., such as a method, aluminum, and tin, Particles and a whisker which doped antimony etc. to metallic oxides, such as tin oxide, What filler-ized an electron donor acceptor complex made between 7,7,8,8-tetracyanoquinodimethane and electron donors (donor), such as a metal ion and an organic cation, polyester resin, It can distribute to an acrylic resin, an epoxy resin, etc., and what doped camphor sulfonic acid etc. to a method, polypyrrole, poly aniline, etc. which are provided by solvent coating etc. can be provided by a method of forming by solvent coating etc., etc. In the case of an optical application, not less than 80% of transmissivity of an antistatic layer is desirable.

[0010]Next, a resin matrix which constitutes a surface roughening layer of this invention is explained. Resin hardened with ultraviolet rays, an electron beam, heat, or such combination as a resin matrix which constitutes a surface roughening layer of this invention is used. A constituent which mixed suitably a monomer which has polymerization nature unsaturated bonds, such as an acrylyl group, a meta-acrylyl group, an acryloyloxy group, and a methacryloyloxy group, oligomer, and a prepolymer as ultraviolet rays or electron beam hardening resin is used. As an example of a monomer, styrene, methyl acrylate, methyl methacrylate, Methoxy polyethylene methacrylate, cyclohexyl methacrylate, phenoxy ethyl methacrylate, ethylene glycol dimethacrylate, dipentaerythritol hexaacrylate, trimethylolpropanetrimethacrylate, etc. can be raised. As oligomer and a prepolymer, polyester acrylates, polyurethane acrylate, Acrylate, such as epoxy acrylate, polyether acrylate, ARUKITTO acrylate, melamine acrylate, and silicon acrylate, unsaturated polyester, an epoxy resin, etc. can be raised. these -- independence -- or it may be used, mixing more than one. As for content of a monomer in said constituent, it is preferred to lessen as much as possible, when the flexibility of a hardening layer is required, and also in order to make crosslinking density low, it is preferred to use an acrylate system monomer of one organic functions and two organic functions. On the contrary, when severe endurance, such as heat resistance, abrasion resistance, and solvent resistance, is required at a hardening layer, it is preferred to make [ many / as possible ] content of a monomer, and it is preferred to use an acrylate system monomer of three or more organic functions especially.

[0011]In ultraviolet rays or electron beam hardening resin, a urethane (meta) acrylate compound especially expressed with the following formula (1) and (2) is preferred from excelling in adhesion with a substrate, abrasion resistance, and chemical resistance. Hereafter, these compounds are explained.

[Formula 1]



(Among a formula, as for  $\text{R}_1$ , a hydrogen atom or  $\text{CH}_3$ , and  $\text{R}_2$  express polyhydric alcohol residues, X expresses isocyanate residue, and Y expresses polyhydric alcohol residues.) As for k, the integer of 1-5 and l express the integer of 1-3, m expresses the integer of 1-2, and n expresses the integer of 1-6. However, k, l, k, and m and n are not 1 simultaneously.

[0012]The urethane (meta) acrylate compound of a formula (1) is a resultant of a hydroxyl group content (meta) acrylate compound and an isocyanate compound, and is a compound which has at least two acrylate groups (meta). The urethane (meta) acrylate compound of a formula (2) is a resultant of a hydroxyl group content (meta) acrylate compound, a polyisocyanate compound, and a polyol compound, and is a compound which has at least two acrylate groups (meta). Any publicly known method can be used as a method of obtaining the above-mentioned urethane (meta) acrylate.

[0013]As a hydroxyl group content (meta) acrylate compound, Glycerin (meta) acrylate, TORIMECHI roll (meta) acrylate, Pentaerythritol (meta) acrylate, GURISERINJI (meta) acrylate, TORIMECHI roll pro pansy (meta) acrylate, penta ERIS RITORUTORI (meta) acrylate, ditrimethylol pro pantry (meta) acrylate, dipentaerythritol penta (meta) acrylate, etc. can be mentioned. Even when these are independent, they can also be used combining more than one.

[0014]As an isocyanate compound, o-tolyl isocyanate, p-tolyl isocyanate, As 4-diphenylmethanisocyanate and polyisocyanate, 2, 4-tolylene diisocyanate, 2, 6-tolylene diisocyanate, 4, and 4-diphenylmethane diisocyanate, m-xylylene diisocyanate, p-xylylene diisocyanate, Tetramethyl xylylene diisocyanate, biphenylene di-isocyanate, 1, 5-naphthylene diisocyanate, o-tolidine di-isocyanate, Hexamethylene di-isocyanate, a 4,4'-methylenebis cyclohexylisocyanate, Polycondensation things, such as isophorone diisocyanate, trimethyl hexamethylene di-isocyanate, 1,3-(isocyanate methyl) cyclohexane and these buret ghosts, and a nurate ghost, can be mentioned. Even when these are independent, they can also be used combining more than one. A nurate ghost of tolylene diisocyanate, xylylene diisocyanate, and hexamethylene di-isocyanate, a nurate ghost of isophorone diisocyanate, etc. are mentioned especially preferably.

[0015]As a polyol compound, ethylene glycol, propylene glycol, Neopentyl glycol, 1,6-hexanediol, glycerin, Aliphatic polyhydric alcohol, such as trimethylolpropane and carboxylic acid content polyol, Ethyleneoxide and a propylene oxide reactant of various bisphenols, Polyol which has an acrylyl group (meta) is mentioned into a molecule which is expressed with a formula (2) irrespective of aromatic polyhydric alcohol, such as ethyleneoxide of a bisphenol fluorene, and a propylene oxide reactant, and aliphatic series, and aromatic series. Dimethylol propionic acid, dimethylolbutanoic acid, a screw phenoxyethanol fluorene, etc. are mentioned especially preferably.

[0016]Although what is necessary is just to irradiate with ultraviolet rays or an electron beam in order to harden the above ultraviolet rays or electron beam hardening resin, a polymerization initiator can be added suitably if needed. As a polymerization initiator, if an activity radical is generated with energy lines, such as heat or visible light, and ultraviolet rays, etc., it can be especially used without restriction. As an example of a polymerization initiator which generates an activity radical, organic peroxide, such as azo compounds, such as 2 and 2'-azobis (2,4-dimethylvaleronitrile), benzoyl peroxide, and lauroyl peroxide, can be raised with heat. As an example of a polymerization initiator which generates an activity radical with an energy line, A diethoxyacetophenone, 2-hydroxy-2-methyl-1-phenylpropan-1-one, Benzyl dimethyl ketal, 1-hydroxycyclohexyl-phenyl ketone, Acetophenones, such as 2-methyl-2-morpholino (4-thiomethyl phenyl) propan-1-one. Benzoin methyl ether, benzoin ethyl ether, benzoin isopropyl ether, Benzoin ether, such as benzoin isobutyl ether, benzophenone, methyl o-benzoylbenzoate, 4-phenylbenzo phenon, 4-benzoyl-4'-methyl-diphenyl sulfide, 4-benzoyl-N,N-dimethyl- N - [2-(1-oxo 2-propenyloxy) ethyl] Benzophenones, such as benzene meta-NAMINIUMU bromide and trimethylammonium chloride (4-benzoylbenzyl). Thioxan tons, such as 2,4-diethylthio xanthone and a 1-chloro-4-dichloro thioxan ton, 2,4,6-trimethyl benzoyl diphenylbenzo IRUOKISAIDO, etc. can be raised. These can be used being able to be independent or mixing more than one. Amine compounds, such as N,N-dimethyl-p-toluidine and 4,4'-diethylamino benzophenone, can also be mixed and used as an accelerator (sensitizer). As content of a photoinitiator, 0.1 to 10% of the weight of a range is good to an ultraviolet-curing-type-resin ingredient. Even if more than this range, hardening worsens at least.

[0017]When forming a surface roughening layer on a TAC film, ultraviolet curing type resin which contains epoxy compound as ultraviolet rays or electron beam hardening resin, and contains a cationic initiator at least as a photopolymerization initiator is preferred by especially the following reasons.

\*\* There is little oxygen inhibition.

\*\* There is dramatically little cure shrinkage.

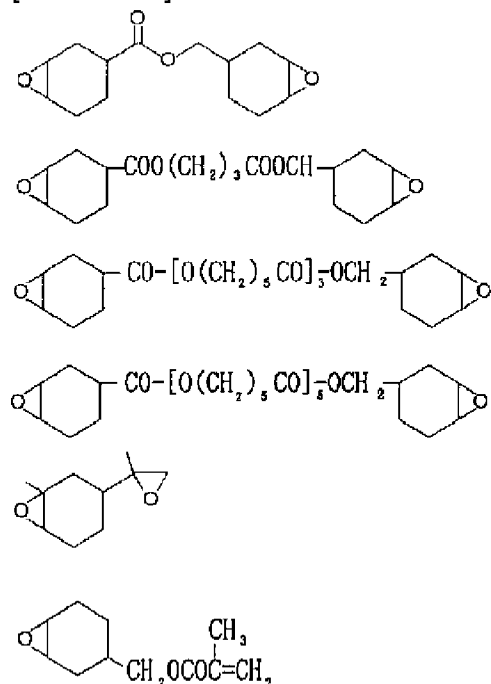
\*\* Excel in adhesion to a transparent substrate.

To anything like the above-mentioned, although adhesion of a transparent substrate is good, it polarizes also in them. On a TAC film used for a film, and a TAC film which performed especially saponification processing Outstanding adhesion is shown. Thus, it is the next if adhesion to TAC which performed saponification processing is good. There is an advantage [ like ]. That is, when manufacturing a polarization film, they are usually a polarization base and TAC FU. It is 1 to carry out saponification processing of the TAC film a priori, in order to raise adhesion with IRUMU. It is carried out in \*\*. A filler content type surface roughening layer was provided in one side of a TAC film. Surface activity which carried out internal to a surface roughening layer for the purpose of preventable contamination when saponification processing was performed using a thing There was a problem that surface modifiers, such as an agent, were eluted or optical properties, such as anti-dazzle property, fell. \*\* These problems are improvable because adhesion to the N-ized processing TAC becomes good.

\*\* Excel in the dispersibility of paints.

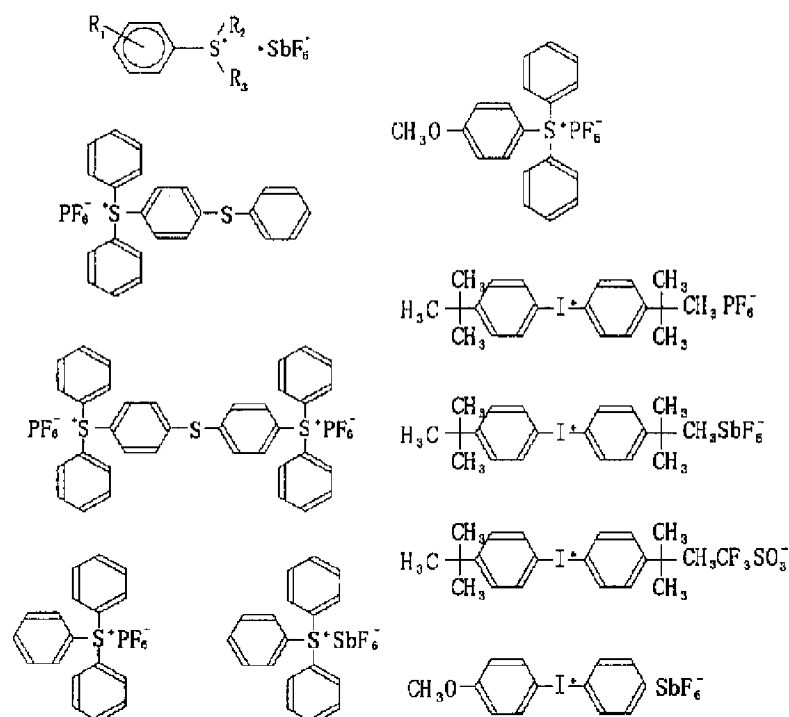
[0018]As the above-mentioned epoxy compound, tetramethylene glycol diglycidyl ether, Propylene glycol diglycidyl ether, neopentyl glycol diglycidyl ether, Glycidyl ether, such as bisphenol A diglycidyl ether, 2-hydroxy-3-phenoxypropylacrylate, A monomer and oligomer, such as epoxy ester, for example, alicyclic epoxy etc. which consist of the following chemical formulas, such as bisphenol A-diepoxyc-acrylic acid adducts, can be raised.

[Formula 2]



[0019]As an optical cationic initiator, the compound which consists of the following chemical formulas, for example can be raised.

[Formula 3]



[0020] These may be used alone, respectively, and they may be used, mixing more than one. In order to control the characteristics of a paint and a coating film, such as viscosity, crosslinking density, heat resistance, and chemical resistance, it is preferred to carry out mixed use of the ultraviolet curing type acrylate. As such acrylate that carries out mixed use, Laurylacrylate, ethoxydiethylene-glycol acrylate, Methoxy triethylene glycol acrylate, phenoxy ethyl acrylate, Tetrahydrofurfuryl acrylate, isobornyl acrylate, 2-hydroxyethyl acrylate, 2-hydroxypropyl acrylate, Monofunctional acrylate, such as 2-hydroxy-3-phenoxy acrylate, Neopentyl glycol diacrylate, 1,6-hexanediol diacrylate, trimethylolpropane triacrylate -- and, [ pentaerythritol doria ] Pentaerythritol acrylate, dipentaerythritol hexaacrylate, Acrylic acid derivatives, such as polyfunctional acrylate, such as trimethylolpropanacrylic acid benzoic ester and trimethylolpropanebenzoic ester, Monofunctional methacrylate, such as 2-ethylhexyl methacrylate, n-stearyl methacrylate, cyclohexyl methacrylate, tetrahydrofurfuryl methacrylate, 2-hydroxyethyl methacrylate, and 2-hydroxybutyl methacrylate, 1, 6 hexanedioldimethacrylate, trimethylolpropanetrimethacrylate, Methacrylic acid derivatives, such as polyfunctional methacrylate, such as glycerin dimethacrylate, glycerin dimethacrylate hexamethylene diisocyanate and pentaerythritol -- doria -- a monomer and oligomer, such as urethane acrylate, such as KURIRETO hexamethylene diisocyanate, can be raised.

[0021] Loadings of an optical cationic initiator have 0.1 to 5.0% of the weight of a desirable range to epoxy compound (total amount of a monomer, oligomer, and a prepolymer) which is base resin. Ultraviolet curing is insufficient even if there are more loadings at least than 0.1 than 5.0. 20% or less of a rate of a volumetric shrinkage accompanying hardening of a surface



roughening layer which uses said ultraviolet rays or electron beam hardening resin (it computes from a following method) is desirable. If a rate of a volumetric shrinkage becomes larger than 20%, when a transparent substrate is a film, curl will become remarkable, and, as for the case of rigid material systems, such as glass, the adhesion of a surface roughening layer will fall [ a substrate ].

A rate of a volumetric shrinkage: Measure a specific gravity ratio pile after specific gravity S':hardening before  $D=(S-S')/S \times 100$  S:hardening by the B method (the pycnometer method) of JIS K-7112. Stabilizing agents (thermal polymerization inhibitor), such as hydroquinone, p-benzoquinone, and t-butylhydroquinone, may be added to ultraviolet rays or electron beam hardening resin. An addition does not have a possibility that 0.1 to 5.0% of the weight of a range may check hardening, to hardening resin, and is preferred.

[0022]As heat-hardened type resin, phenol resin, furan resin, xylene formaldehyde resins, ketone formaldehyde resins, a urea resin, melamine resin, aniline resin, alkyd resin, unsaturated polyester resin, an epoxy resin, etc. can be raised. These may be used being independent or mixing more than one. When a transparent substrate is a plastic film, heat-curing temperature cannot be set up highly. As for heat-hardened type resin to be used, when using especially PET and TAC, it is desirable that it can harden below 100 \*\*. The transparency of ultraviolet rays used for a surface roughening layer of this invention or electron beam hardening resin, and heat-hardened type resin is so good that it is high, and preferably [ not less than 90% of ] desirable not less than 80% like a transparent substrate as light transmission (JIS C-6714).

[0023]In a resin matrix, leveling agents, such as silicone oil, dicarboxylic acid, High-class saturated fatty acid amine, high-class unsaturated fatty acid amine, high-class saturated fatty acid amide, High-class unsaturation fatty-acid-amide, saturated higher-fatty-acid, high-class unsaturated fatty acid, and high-class saturated fatty acid metal salt, High-class unsaturation fatty acid metal salt, saturated polybasic acid, unsaturation polybasic acid, polyethylene wax, Oil and fat which consist of higher alcohol, higher alcohol, and higher fatty acid, such as ester and screw AMAIDO, Hardening agents, such as an isocyanate, synthetic mica, a zinc oxide, zirconium oxide, Caesium oxide, silica, calcium carbonate, aluminium hydroxide, magnesium hydroxide, Inorganic system white pigments, such as magnesium fluoride, clay, talc, and a titanium dioxide, An acrylic resin, polystyrene resin, polyethylene resin, an epoxy resin, ultrafine particles of 50 nm or less, such as transparency of organic systems, such as silicon resin, or a white pigment, -- various additive agents, such as viscosity controlling agents, such as an ultrafine particle of 30 nm or less, a spray for preventing static electricity mentioned above, cellulose acetate, and a nitrocellulose, and a surface-active agent, can be used preferably, choosing them suitably. When adding paints, it is desirable to use what was used as a colloidal solution. Since transparency will worsen by internal dispersion if paints condense

the 2nd order in a transparent matrix, it is desirable to carry out the surface treatment of the paint's surface by silicate compound, a titanate compound, etc., to carry out surface treatment by plasma treatment etc., or to add dispersing agents, such as an electronic transition complex.

[0024]The transparency of a resin matrix after adding various additive agents is so good that it is high, and preferably [ not less than 85% of ] desirable not less than 70% like a transparent substrate as light transmission (JIS C-6714). In this invention, the transparency of a resin matrix also influences the refractive index (the JIS K-7142A method). The range of a refractive index of 1.40-1.65 is preferred. The range of 1.45-1.55 is good especially preferably. A refractive index of a resin matrix is decided by a refractive index and combination of resin used for a resin matrix, and an additive agent. It is necessary to adjust but so that it may go into the above-mentioned range, and it is desirable for loadings of an additive agent to be total-solids concentration, and to consider it as 40% or less in this case. If 40% is exceeded, endurance, such as the abrasion resistance of a surface roughening layer and chemical resistance, will deteriorate.

[0025]By making a filler with a small difference of a resin matrix which starts into the above-mentioned resin matrix in this invention, and a refractive index contain, surface roughening of the surface can be carried out and an outstanding anti-glare effect can be given. Namely, they are so desirable that they are near although a refractive index of a filler and a refractive index of resin matrix may have large whichever. And a difference of a refractive index of a filler and a transparent matrix needs to be 0.10 or less, and 0.05 or less are preferably good. When a difference of a refractive index exceeds 0.10, internal dispersion becomes large, transparency is spoiled and a flash (moire) is also dramatically conspicuous. A refractive index of a resin matrix and a filler is not limited especially if the difference is 0.10 or less like the above, but as a refractive index of a resin matrix and a filler, A thing of 1.40-1.60 is preferred on optical properties, such as anti-dazzle property from a relation with a refractive index of a transparent substrate, and acid resistibility, a thing of the range of 1.45-1.53 excels [ refractive index / especially / of these materials ] in an optical property, and it is preferred. A refractive index of a resin matrix and a filler is measured by JIS K-7142.

[0026]As a filler like the above, a zinc oxide, zirconium oxide, caesium oxide, Silica, calcium carbonate, aluminium hydroxide, magnesium hydroxide, Transparency or a white pigment of organic systems, such as inorganic system white pigments, such as magnesium fluoride, clay, talc, and a titanium dioxide, an acrylic resin, polystyrene resin, polyethylene resin, an epoxy resin, and silicon resin, etc. can be used. Spherical silica and organic system paints are especially preferred.

[0027]Especially a bridge construction acrylic bead is good as a filler which has a refractive index within the limits of the above-mentioned as the above-mentioned organic system paints.

As a bridge construction acrylic bead, acrylic acid and its ester, methacrylic acid, and its ester, A bridge construction acrylic bead which consists of a polymer and a copolymer which are produced by polymerizing with a suspension polymerization method etc. can use it conveniently using cross linking agents, such as polymerization initiators, such as acrylic system monomers, such as acrylamide and acrylic nitril, and persulfuric acid, and ethylene glycol dimethacrylate. A polymer which uses methyl methacrylate as an acrylic monomer component especially is preferred. Thus, an obtained bridge construction acrylic bead is spherical, and since oil supply nature is not shown, when it is used for a surface roughening layer, outstanding resistance to contamination can be revealed. If the above-mentioned filler condenses in a transparent matrix, transparency will worsen by internal dispersion. In order to improve dispersibility of a filler in inside of a transparent matrix, it is desirable to carry out the surface treatment of the surface of a filler by silicate compound, a titanate compound, etc., to perform surface treatment by plasma treatment etc., or to add dispersing agents, such as an electronic transition complex, further.

[0028]When particle diameter and particle size distribution of a filler control unevenness of a surface roughening layer surface precisely, they are important. As the particle diameter  $D$  of a filler (JIS B9921), 15.0 micrometers or less are desirable, and as particle size distribution, It is desirable for a thing of a range whose thing of a range whose things of the range of  $0.5 \leq D \leq 6.0$  micrometers are 60 % of the weight or more and  $6.0 < D \leq 10.0$  micrometers is  $10 < D \leq 15.0$  micrometers further less than 30% of the weight to be 5 or less % of the weight. It is preferred that a thing of a range whose things of the range of  $0.5 \leq D \leq 6.0$  micrometers are 80 % of the weight or more and  $6.0 < D \leq 10.0$  micrometers especially does not contain at all a thing of a range which are less than 10 % of the weight and  $10 < D \leq 15.0$  micrometers. When weight % of a filler in the range of  $0.5 \leq D \leq 6.0$  micrometers is less than 60%, if particles below 0.5 micrometer increase, an anti-glare effect of a display will worsen, and when a not less than 15-micrometer thing increases conversely, there is a possibility of producing a flash. When a filler which has a filler in the range of  $6.0 < D \leq 10.0$  micrometers in a range which is 30 % of the weight or more or  $10 < D \leq 15.0$  micrometers is 5 % of the weight or more, it becomes easy to generate a flash in a picture of a display. About loadings of a filler, it is a total-solids ratio in a surface roughening layer, and 0.5 to 30% of the weight of a range is good. 1 to 15% of the weight of a range is especially preferred. If loadings become insufficient [ less than 0.5 % of the weight / an anti-glare effect ] and exceed 30 % of the weight, endurance, such as abrasion resistance and a resistance to environment, will worsen.

[0029]Put fillers, such as a bridge construction acrylic bead, in resin hardened as a method of forming a surface roughening layer of this invention with ultraviolet rays described above, an electron beam, either of the heat, or such combination, for example, and with water or an organic solvent. A paint shaker, a sand mill, a pearl mill, a ball mill, attritor, A roll mill, a high-

speed impeller dispersion machine, a jet mill, a high-speed shock mill, A paint or ink distributed with an ultrasonic dispersion machine etc. Exhaust air doctor coating, Braid coating, knife coating, reverse coating, Transfer roll coating, gravure roll coating, kis coating, Cast coating, spray coating, slot orifice coating, Calender coating, electrodeposition coatings, dip coating, Coating of die coating etc., and Toppan Printing, such as flexographic printing, When it divides via direct or other layers on one side of a transparent base material, or both sides at a monolayer or a multilayer by printing of mimeograph printing of lithography of intaglio printing, such as direct gravure printing and offset gravure printing, offset printing, etc., screen-stencil, etc., etc., it provides and a solvent is included, A method of forming by stiffening a coating layer or a printing layer by ultraviolet rays (in the case of ultraviolet rays, a photoinitiator is required) or electron beam irradiation, etc. are raised through a heat drying process. When based on an electron beam, a cockloft WARUTON type, a BANDE graph type, An electron beam etc. which have the energy of 50 emitted from various electron beam accelerators, such as a resonance transformation type, an insulation core transformer type, a linear model, the Dynamitron type, and a high frequency type, - 1000KeV are used, In the case of ultraviolet rays, ultraviolet rays etc. which are emitted from beams of light, such as an ultrahigh pressure mercury lamp, a high-pressure mercury-vapor lamp, a low pressure mercury lamp, a carbon arc, a xenon arc, and a metal halide lamp, can be used. In order to raise coating fitness or a printability of a paint and ink, various additive agents to the aforementioned resin matrix can be used suitably if needed.

[0030]In this invention, it is particle diameter of a filler in a surface roughening layer and particle size distribution, and controlling formation conditions, such as surface roughening layer thickness, and it is possible to consider it as a surface shape from which an optical property superior to that of a surface roughening layer is obtained. As surface roughening layer thickness, the range of 0.5-10 micrometers is preferred, and the range of 1-5 micrometers is good. When the abrasion resistance of a surface roughening layer worsens when a surface roughening layer is thinner than 0.5 micrometer, or ultraviolet curing type resin is used, curing failure is caused by oxygen inhibition. When thicker than 10 micro, by cure shrinkage of resin, curl occurs, a micro crack occurs in a surface roughening layer, or adhesion with a transparent base material falls further. As for surface roughness (JIS B0601) of a surface roughening layer, it is desirable that it is in the range of  $Ra$ (arithmetical mean deviation of profile)  $0.03 \leq Ra \leq 0.30$  and  $2 \leq Sm \leq 50$  (concavo-convex average interval). If  $Ra$  and  $Sm$  separate from this range, anti-dazzle property will worsen or it will become easy to generate a flash of a picture.

[0031]It is also possible to provide an antireflection film which consists of a monolayer which adjusted a refractive index, or two or more layers on a surface roughening layer of this invention. By providing an antireflection film, the picture contrast can improve remarkably and

can obtain good image quality. As for an antireflection film, two or more surface acid-resisting effects of the layer are higher than a monolayer, and better image quality is obtained. an antireflection film which an antireflection film of a monolayer is obtained by providing a layer whose refractive index is smaller than a surface roughening layer, and consists of two or more layers makes 1 set a layer with a larger refractive index than a surface roughening layer, and a layer whose refractive index is smaller than a surface roughening layer -- this -- 1 set -- or 2 or more sets is laminated and it provides. In this case, it is required, in order to attain acid resistibility excellent in laminating and providing so that a refractive index of a layer with a small refractive index used as the outermost superficial layer may become small one by one. As a material used for a layer with this small refractive index,  $\text{TiO}_2$ ,  $\text{ZrO}_2$ , etc. are mentioned as a material which  $\text{MgF}$ ,  $\text{SiO}_2$ , etc. use for a layer with a large refractive index. Usually, such materials paint-ize gaseous phase methods, such as vacuum evaporation and sputtering, sol gel processes, or such materials, and form them by all directions methods, such as roll coating and printing.

[0032]Thus, as for a HAZE value by JIS K7105 of anti-dazzle material of produced this invention, it is preferred that it is the range of 3-30. In this case, if a HAZE value becomes poor [ anti-dazzle property ] at less than three and is large exceeding 30 on the other hand, it is not desirable from picture contrast worsening, becoming poor [ visibility ] and causing a depression as a display. A HAZE value means haze value, diffuse transmittance ( $\text{Hd}\%$ ) and total light transmittance ( $\text{Ht}\%$ ) are measured using an integrating sphere type light transmission measuring device, and it is computed with a following formula.

$\text{HAZE value} = \text{Hd}/\text{Ht} \times 100$  [0033]A polarization film of this invention via direct or other layers on one side of a transparent substrate, A surface roughening layer which comes to distribute a filler is provided into a resin matrix at least, a surface roughening layer of this transparent substrate has the composition which laminates a protective layer via a polarization base to an opposite side, and a difference of a refractive index of said resin matrix and a filler is 0.10 or less. As a polarization base in this invention, it consists of material which can form a bright film, and, specifically, polyvinyl alcohol, polyvinylene, etc. can be used. It is preferred to use a polyvinyl alcohol (PVA) film produced by extending one axis of polyvinyl alcohol to which could use a film produced by making extend the above-mentioned material as this polarization base, for example, iodine or a color was made to stick as a dichroic element. That in which a polarization base has a thickness of 10-80 micrometers is used.

[0034]On both sides of a polarization base obtained by impregnating with a PVA film which extended a PVA film about 3 to 4 times to 1 shaft orientations, and was specifically extended in high order iodine ion, polyester system adhesives, What has the structure which laminated a protective layer for a transparent substrate which has a surface roughening layer in one field at one side in another field with poly acrylic adhesives, polyurethane adhesive, polyvinyl acetate

system adhesives, etc. is preferred. Since a PVA film obtained above splits easily and has the fault that contraction is large, from intensity etc. running short to humidity, a protective layer laminates it on both sides of a polarization base. In this case, a transparent substrate has a function as a protective layer of one field, and cellulose type films, such as a film of a transparent high molecular compound, for example, triacetyl cellulose etc., polyester film, a polycarbonate film, etc. are used for a field of another side as a protective layer. Triacetyl cellulose is preferred also especially in it. As for thickness of this film, 10-2000 micrometers is preferred. It is preferred by using gelling agents, such as way acid, especially for these films, or performing heat treatment and formal-ization to raise the water resisting property of a film. In order to raise adhesion with a polarization base, it is preferred to perform surface treatments, such as saponification processing and corona treatment, so that critical surface tension of an adhesion side with a polarization base may be 50 or more dyne/cm. It can also be considered as laminated constitution which sandwiched both sides of a polarization film using a transparent substrate which has a surface roughening layer as a protective layer.

[0035]It explains in more detail using a drawing below. Drawing 1 is an outline sectional view showing composition of anti-dazzle material which consists of a transparent substrate of this invention, and one side of the anti-dazzle material shows that the above-mentioned surface roughening layer and a surface layer are formed one by one. In drawing 1, the anti-dazzle material 10 is the composition of having the surface roughening layer 12 on one side of the transparent substrate 11. Drawing 2 is an outline sectional view showing composition of the polarization film 20 of this invention, and shows that the polarization base 24 is laminated on one side of the transparent substrate 21 23 which has the surface roughening layer 22, i.e., anti-dazzle material, and the protective layer 25 is formed in other fields on the other hand. Drawing 3 shows composition of the liquid crystal displaying body 30 which has improved anti-dazzle property with anti-dazzle material of this invention. This liquid crystal displaying body 30 laminates the liquid crystal panel 31 on top and the sources 32 of back light, such as a light guide plate device (EL) at the bottom and a lamp, and is formed. To the liquid crystal panel 31, it is usable in the Twisted Nematic (TN) liquid crystal cell etc., for example.

[0036]Transparent electrode side 33' of the glass bases 33 and 34 of two sheets with a transparent electrode which a TN liquid crystal cell becomes from a desired pattern, And on 34', a solution of polyimide is applied and an orienting film is formed, and orientation of this is carried out by rubbing operation, the nematic liquid crystal 35 is poured in between this substrate after that, and it is formed by sealing a glass base periphery with an epoxy resin etc. 90 degrees of this nematic liquid crystal is twisted by operation of an orienting film, and orientation is carried out. The liquid crystal panel 31 is formed by sticking the polarization film 37 no surface roughening layer is [ polarization film ] in that source side of back light again about the polarization film 36 which has the surface roughening layer 22 indicated to be a

source of back light of two glass substrates of this TN liquid crystal cell to drawing 2 in an opposite hand so that 90 degrees of the degrees of angle of polarization may be twisted mutually.

[0037]If a driving signal is impressed to a transparent electrode of the above-mentioned TN liquid crystal panel 31, an electric field will occur in inter-electrode [ to which a signal was impressed ]. Since a major axis of a liquid crystal element becomes an electric field direction and parallel with electronic anisotropy which a liquid crystal element has in that case, it will be in the state where the optical rotation of light by a liquid crystal element will be lost, and light does not penetrate to a liquid crystal panel as a result. A display of a picture is recognized as vision information by contrast based on a difference of light transmission at this time. In the above-mentioned liquid crystal displaying body 30, image display is made possible by giving contrast to a portion which makes the liquid crystal panel 31 penetrate and light of the liquid crystal panel 31 penetrates, and a portion which is not penetrated.

[0038]Drawing 4 is a sectional view showing composition of other liquid crystal displaying bodies which use the anti-dazzle material 10 of this invention. The nematic liquid crystal 45 in which the liquid crystal panel 41 intervenes the glass bases 43 and 44 of two sheets, and between them in drawing 4, It comprises the anti-dazzle material 10 laminated on the polarization film 46 of the upper part which does not have a surface roughening layer located in the outside of a glass base, the polarization film 47 of the lower part which does not have a surface roughening layer, and a polarization film of this upper part. The liquid crystal displaying body 40 laminates the source 32 of back light located in the liquid crystal panel 41 and its undersurface, and is formed.

[0039]

[Example]An example explains this invention. A "part" shall mean "% of the weight" a "weight section" and"%."

50 copies of following dispersion liquid obtained by distributing the mixture of <Example 1> silica, a dispersing agent, and a solvent for 30 minutes in a sand mill, The paint for surface roughening layers produced by stirring 152 copies of following base coatings for 15 minutes in mixing and DISUPA, the triacetyl cellulose film (trade name: -- Fuji tuck UVD80 and the Fuji Photo Film Co., Ltd. make.) which is a transparent substrate which consists of 80 micrometers of thickness, and 92% of transmissivity On one side of the refractive index 1.49, it applies by a reverse coating method, A part for irradiation range [ of 10 cm ] (distance from lamp center to coating surface) and processing speed (speed to UV lamp by the side of coating base)/of 5 m performed UV irradiation after desiccation using condensed type high-pressure mercury-vapor lamp 1 light of ultraviolet ray lamp output 120 w/cm for 2 minutes at 100 \*\*, and the coating film was stiffened. Thus, 3.2 micrometers in thickness, the refractive index 1.50 (the refractive index of the resin matrix applied and dried only the base coating, and measured it.) of a resin

matrix the following example and comparative examples -- the same . The surface roughening layer was formed and the anti-dazzle material of this invention was obtained. The HAZE value of anti-dazzle material was 10.5.

[0040]

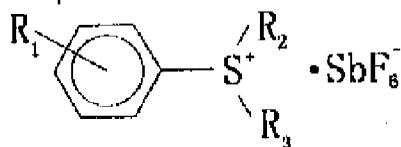
[Combination of dispersion liquid] - silica 95 copies (trade name: SAIROSU fair, the refractive index 1.45, the Fuji SHIRISHIA chemicals company make)

Particle size distribution (particle diameter D) 0.5 micrometer  $\leq D \leq 6.0$  micrometer 68% 6.0 micrometer  $< D \leq 10.0$  micrometer 29% 10.0 micrometer  $< D \leq 15.0$  micrometer 2% and dispersing agent Five copy (trade name: 1002B, Soken Chemical & Engineering make) and toluene 500 copy and isopropyl alcohol 500 copies [0041]

[Combination of a base coating] - acrylic compound Dipenta ERIS TORIRUTORI acrylate 35 copy and epoxy compound (trade name: made in [ Daicel Chemical Industries /, Ltd. /, Ltd. ] the SEROKI site 2021)

35 copy and optical radical initiator Three copies (trade name: IRGACURE #184, tiba speciality chemical company make)

- Optical cationic initiator Two copies [Formula 4]



- silica -- sol 67 copies (trade name: organosilica sol MIBK-ST, 30% of solid content, the Nissan chemicals company make)

- Isopropyl alcohol Ten copies [0042] <Example 2> The anti-dazzle material of this invention was obtained like Example 1 except having changed combination of dispersion liquid, and combination of the base coating below, and also having made 152 copies of mixed amounts of the base coating of the paint for surface roughening layers into 132 copies. The refractive index 1.51 of 2.6 micrometers of surface roughening layer thickness and a resin matrix and the HAZE value of anti-dazzle material were 22.0.

[Combination of dispersion liquid] - acrylic filler 95 copies (trade name: MX300, the refractive index 1.50, Soken Chemical & Engineering make) Particle-size-distribution (particle diameter D) 0.5 micrometer  $\leq D \leq 6.0$  micrometer 100% (particle diameter of 3.0\*\*0.5 micrometers), and dispersing agent Five copies (1002B trade name:.) Soken Chemical & Engineering and toluene 500 copy and isopropyl alcohol 500 copies [0043]

[Combination of a base coating] 40 copies (trade name: UA306H, the Kyoeisha chemicals company make) of - acrylic compounds - tetra pentaerythritol polyacrylate 20 copy and epoxy compound 20 copies (trade name: made in [ Daicel Chemical Industries /, Ltd. /, Ltd. ] the SEROKI site 2021)



- Optical radical initiator Five copies (trade name: IRGACURE #184, tiba speciality chemical company make)

- silica -- sol 37 copies (trade name: organosilica sol MIBK-ST, 30% of solid content, the Nissan chemicals company make)

- Isopropyl alcohol Ten copies[0044]<Example 3> The anti-dazzle material of this invention was obtained like Example 1 except having changed the dispersion liquid of a surface roughening layer, and a base coating below, and also having made 152 copies of mixed amounts of the base coating of the paint for surface roughening layers into 142 copies. The refractive index 1.49 of 2.8 micro of surface roughening layer thickness and a resin matrix and the HAZE value of anti-dazzle material were 17.0.

[Combination of dispersion liquid] - silica 20 copies (trade name: high pre deer FQ, the refractive index 1.45, Ube-Nitto Kasei make)

Particle-size-distribution (particle diameter D) 0.5 micrometer $\leq$ D  $\leq$ 6.0micrometer 100% (particle diameter of 1.0\*\*0.1 micrometers), and silica 75 copies (trade name: SAIROSU fair, the refractive index 1.45, the Fuji SHIRISHIA chemicals company make)

Particle size distribution (particle diameter D) 0.5 micrometer $\leq$ D  $\leq$ 6.0micrometer 68% 6.0 micrometer<D  $\leq$ 10.0micrometer29% 10.0 micrometer<D  $\leq$ 15.0micrometer 2% and dispersing agent Five copy and toluene 500 copy and isopropyl alcohol 500 copies[0045]

[Combination of a base coating] - acrylic compound 40 copies Neopentyl glycol diacrylate - acrylic compound 40 copies (trade name: UA515H, the Kyoeisha chemicals company make)

- Optical radical initiator Five copies (trade name: IRGACURE #184, tiba speciality chemical company make)

- silica -- sol 47 copies (trade name: organosilica sol MIBK-ST, 30% of solid content, the Nissan chemicals company make)

- Isopropyl alcohol Ten copies[0046]<Comparative example 1> It is made to be the same as that of Example 1 except having changed dispersion liquid and a base coating below, and also having made 152 copies of mixed amounts of the base coating of the paint for surface roughening layers into 176 copies, The anti-dazzle material for comparison which are the refractive index 1.56 of 3.2 micro of surface roughening layer thickness and a resin matrix and the HAZE value 15.0 of anti-dazzle material was obtained. [Combination of dispersion liquid] - silica 50 copies (trade name: UNK high pre deer FQ N3N, the refractive index 1.40, Ube-Nitto Kasei make)

Particle-size-distribution (particle diameter D) 0.5 micrometer $\leq$ D  $\leq$ 6.0micrometer 100% (particle diameter of 5\*\*0.5 micrometers)

- Silica 50 copies (trade name: UNK high pre deer FQ N3N, the refractive index 1.40, Ube-Nitto Kasei make)

Particle-size-distribution (particle diameter D) 0.5 micrometer $\leq$ D  $\leq$ 6.0micrometer 100%

(particle diameter of 4 micrometers)

- Isopropyl alcohol 1000 copies[0047]

[Combination of a base coating] - acrylic compound 40-copy neopentyl glycol diacrylate -

acrylic compound 30 copies (trade name: UA515H, the Kyoeisha chemicals company make)

- Optical radical initiator Six copies (trade name: IRGACURE #1800, tiba speciality chemical company make)

- a titania -- sol 100 copies (trade name: CSK5, 20% of solid content, Ishihara techno company make)

[0048]<Comparative example 2> It was considered as the anti-dazzle material for comparison like Example 1 except having changed dispersion liquid and a base coating below, and also having made 152 copies of mixed amounts of the base coating of the paint for surface roughening layers into 120 copies. The refractive index 1.60 of 3.2 micro of surface roughening layer thickness and a resin matrix and the HAZE value of anti-dazzle material were 35.0.

[Combination of dispersion liquid] - silica 50 copies (trade name: UNK high pre deer FQ N3N, the refractive index 1.40, Ube-Nitto Kasei make)

Particle-size-distribution (particle diameter D) 0.5 micrometer $\leq$ D  $\leq$ 6.0micrometer 100% (particle diameter of 5\*\*0.5 micrometers)

- Silica 50 copies (trade name: UNK high pre deer FQ N3N, the refractive index 1.40, Ube-Nitto Kasei make)

Particle-size-distribution (particle diameter D) 0.5 micrometer $\leq$ D  $\leq$ 6.0micrometer 100% (particle diameter of 4 micrometers)

- Isopropyl alcohol 1000 copies[0049]

[Combination of a base coating] 14 copies of - acrylic compounds (trade name: uni-DIKKU 17-806, 80% of solids concentration, Dainippon Ink & Chemicals, Inc. make)

- Acrylic compound 14 copies (trade name: UA515H, the Kyoeisha chemicals company make)

- Optical radical initiator Four copies (trade name: IRGACURE #1800, tiba speciality chemical company make)

- a titania -- sol 88 copies (trade name: CSK5, 20% of solid content, Ishihara techno company make)

[0050]<Comparative example 3> The anti-dazzle material for comparison was obtained like Example 1 except having changed combination of dispersion liquid and a base coating below, and also having made 152 copies of mixed amounts of the base coating of the paint for surface roughening layers into 130 copies. The refractive index of 3.3 and resin matrix of surface roughening layer thickness was the HAZE value 1.5 of 1.53 and anti-dazzle material.

[Combination of dispersion liquid] - silica 25 copies (trade name: UNK high pre deer FQ N3N, the refractive index 1.40, Ube-Nitto Kasei make)

Particle-size-distribution (particle diameter D) 100% 0.5 micrometer $\leq$ D  $\leq$ 6.0micrometer

(particle diameter 5\*\*0.)

5 micrometers

- Dispersing agent Five copy (trade name: 1002B, Soken Chemical & Engineering make) and toluene 500 copy and isopropyl alcohol 500 copies [Combination of a base coating], and acrylic resin 65 copies (trade name: ADEKAOPUTOMA KR-566, Asahi Denka Kogyo K.K. make)

- Isopropyl alcohol 65 copies[0051]Anti-dazzle property, a picture flash, abrasion resistance, chemical resistance, and picture contrast were evaluated using the anti-dazzle material 10 obtained by Examples 1-3 and the comparative examples 1-3. About picture contrast, the polarization film 20 of composition of being shown in drawing 2 was produced using said anti-dazzle material 10, this polarization film 20 was stuck on the glass base 33 as shown in drawing 3, and the liquid crystal displaying body 30 was obtained. The image size of the liquid crystal displaying body 30 was 10.4 inches, and resolution was evaluated as 800 dots x 600 dots. The valuation method is as follows.

Image clarity measuring instrument ICM-1DP by <anti-dazzle property> Suga Test Instruments [ Co., Ltd. ] Co., Ltd. (JIS K7105) was used and measured by optical comb 2 mm in width by transparent mode. Anti-dazzle property is so high that measured value is small. Here, \*\* and 70 or more were evaluated [ less than 50% ] for O, not less than 50%, and less than 70% as x.

[0052]<Picture flash> Said anti-dazzle material 10 is piled up so that a surface roughening layer may turn up on the glass substrate 33 shown in drawing 3, and anti-dazzle material is rotated 360 times clockwise slowly. Since the stripe of light occurred on the screen when there was a flash (moire), viewing estimated the existence and the grade of this stripe. What has O and a flash in the case where there is no flash (moire) was made into x.

Steel wool #0000 of <abrasion resistance> Japan steel wool nature is attached to a paperboard abrasion resistance tester (made by Kumagaya Riki Kogyo K.K.), and the surface roughening stratification plane of anti-dazzle material is made to go back and forth 50 times in load  $200 \text{ g/cm}^2$ . Then, the HAZE value of the portion was measured in the HAZE meter made from an Oriental energy machine, and it asked for HAZE value change  $\Delta H$ .  $\Delta H$  of abrasion resistance based on the following calculation is good at one or less, if 5 is exceeded, its crack will increase and it will pose a problem practically. The antireflective material simple substance performed measurement of the HAZE value. The HAZE value before the HAZE value-examination after a HAZE value change  $\Delta H$ = examination [0053]It is 50 round-trip \*\*\*\* with an isopropyl alcohol \*\*\*\*\* cotton swab (made in Johnson) about a <chemical-resistant> surface roughening stratification plane. O and its middle were evaluated for the case where there are not x and change about the case where a surface roughening layer has remarkable change, such as peeling, as \*\*.

It evaluated based on the contrast ratio (CR) measuring method of the liquid crystal display panel in <picture contrast> JIS C7072 (1988). Light source 60-liquid crystal panel 61-photometer 62 physical relationship in evaluation of picture contrast is shown in drawing 5. In this case, the angle of aperture of 50 cm and a photometer was set as 5 degrees between 1 cm, the liquid crystal panel 61, and the photometer 62 between the light source 60 and the liquid crystal panel 61. EL of 5W was used for the light source, and LS-100 by Minolta Camera Co., Ltd. was used for the photometer. \*\*, \*\*, and less than 2 were made [ the case where CR was three or more ] into x for O, \*\*, and the case of 2 or more [ - ] and less than 3.

[0054]The above evaluation result is shown in Table 1.

[Table 1]

サンプル	屈 折 率			H A Z E 値	防眩性	ギラツキ
	樹脂 マトリックス	フィラー	屈折率 の差			
実施例 1	1.50	1.45	0.05	10.5	○	○
実施例 2	1.51	1.50	0.01	22.0	○	○
実施例 3	1.49	1.45	0.04	17.0	○	○
比較例 1	1.56	1.40	0.16	15.0	○	×
比較例 2	1.60	1.40	0.20	35.0	△	×
比較例 3	1.53	1.40	0.13	1.5	×	×

	耐摩耗性	耐薬品性	画像コントラスト
実施例 1	0.3	○	○
実施例 2	0.5	○	○
実施例 3	0.9	○	○
比較例 1	4.5	△	○
比較例 2	15.0	×	×
比較例 3	0.8	○	○

[0055]As for each comparative example with a large difference of the resin matrix of a surface roughening layer, and the refractive index of a filler, it has a problem of the flash of a picture to the good characteristic having been obtained as for each anti-dazzle material of this invention so that clearly from the result of Table 1.

[0056]

[Effect of the Invention]In the composition for which the anti-dazzle material of this invention provided the surface roughening layer which comes to distribute a filler in a resin matrix via direct or other layers in one side or both sides of the transparent substrate, Since the difference of the refractive index of said resin matrix and a filler is 0.10 or less, when it applies

to the image display bodies, especially a high definition image display body, such as CRT and LCD, there is no flash, and it is high contrast and it becomes possible to acquire a clear picture. Chemical resistance, abrasion resistance, and anti-dazzle property excellent in choosing as this surface roughening layer the filler which has specific particle size distribution for the resin hardened with ultraviolet rays, an electron beam, and/or heat in it can be revealed. Since the polarization film which uses the anti-dazzle material of this invention has the outstanding anti-dazzle property, does not have a flash and can acquire good picture contrast, it is useful as image display bodies, such as a liquid crystal panel. The image quality of a display can be further raised by providing an antireflection film on a surface roughening layer.

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[Translation done.]